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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE • JULY 12, 1947

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Spotting Weather

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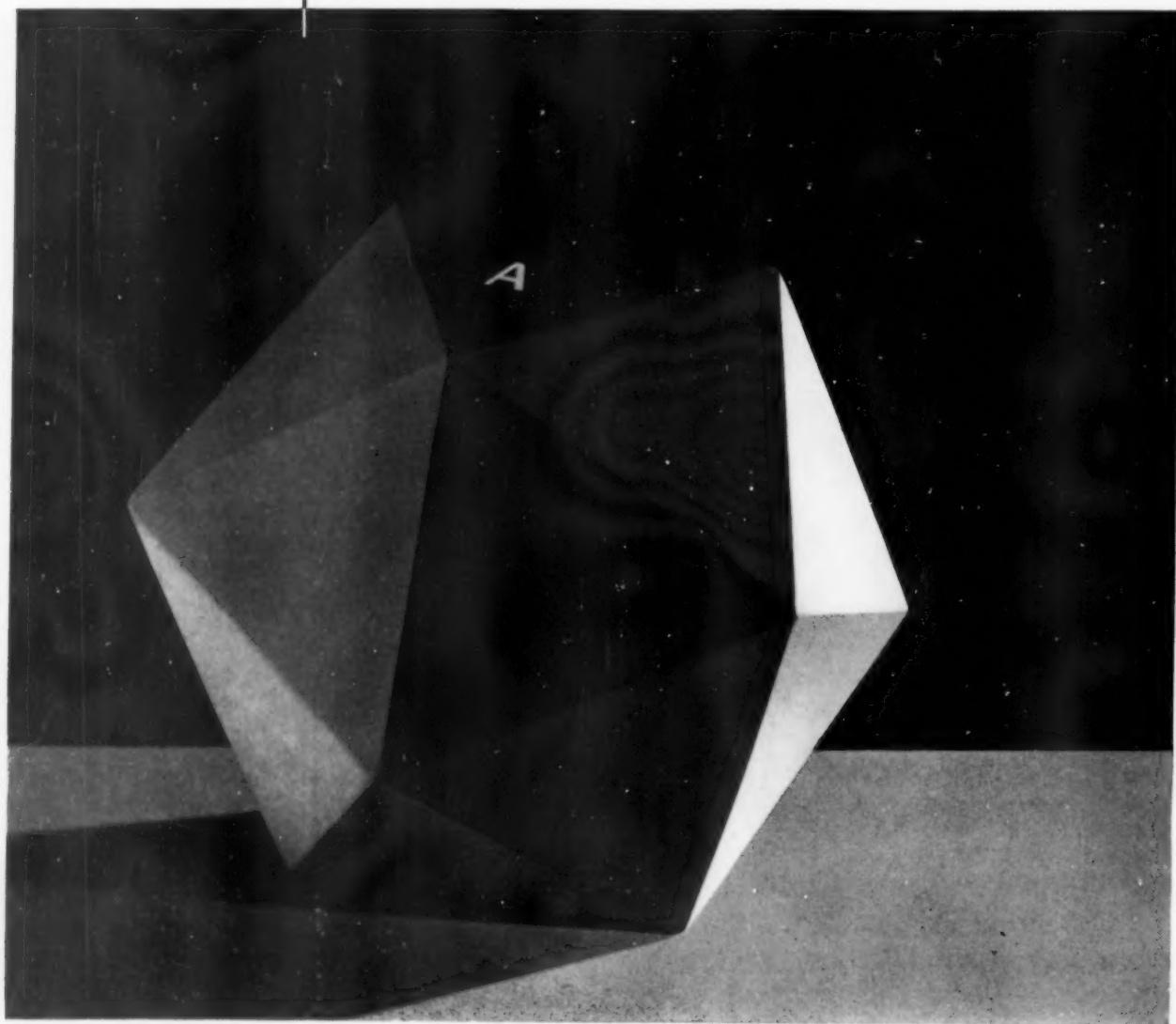
It tells when you will telephone

"It" is an icosahedron—a solid with twenty regular faces. The laws of probability say that if you roll a hundred icosahedrons on a table, eleven or more will come to rest with side "A" on top only once in a hundred throws.

Identical laws of probability rule the calls coming into your local Bell Telephone exchange. Suppose you are one of a group of a hundred telephone subscribers whose practice is to make one three-minute call each during the busiest hour of the day. The chance that

eleven or more of you will be talking at once is also only one in a hundred. Thus it would be wasteful for the Bell System to supply your group with a hundred trunk circuits. Eleven trunks will suffice to give you good service.

Telephone traffic conditions vary. But you can be sure, wherever you live, that Bell Telephone Laboratories research, which pioneered in applying probability theory to telephone traffic, is everywhere helping to make the most use of costly equipment.



BELL TELEPHONE LABORATORIES



EXPLORING AND INVENTING, DEVISING AND PERFECTING, FOR CONTINUED IMPROVEMENTS AND ECONOMIES IN TELEPHONE SERVICE

ELECTRONICS

First "Sofar" Station

Navy is using new method for locating survivors at sea by underwater sound system. Picks up sound over 3,000 miles distant.

► THE FIRST "Sofar" receiving station in the new Navy long-range, underwater sound system for locating air and ship survivors at sea, is ready for operation. This station, located at Monterey, Calif., recently heard and recorded the sound of a bomb exploding under water 2,300 miles away.

This Monterey station is the first of four which will be used to cover the Pacific. A second will be located at Point Arena, northwest of San Francisco; the other two on separated islands in the Hawaii group. All will be ready for use later this year.

Sofar is a war-developed system coming as a by-product of submarine-detection studies carried out under the leadership of Dr. Maurice Ewing of Columbia University for the Navy at Woods Hole Oceanographic Institution in Massachusetts. In tests made in the Atlantic over a year ago, sound was picked up 3,100 miles from its source. It is expected that this range will be doubled with improved equipment.

In the system, a bomb designed as standard equipment on lifeboats is dropped overboard by the survivors. It is triggered to be exploded by the water pressure when it has descended about a half mile. It is then in a layer of water, from some 2,000 to 6,000 feet below the surface which, somewhat like a speaking tube, confines the sound waves within itself and transmits them for long distances.

At the receiving station, recording equipment is connected by submarine cables to nearby hydrophones which are set deep in the water to receive the sound waves. These hydrophones pick up the underwater sound waves much as the ordinary telephone picks up the air sound waves from the human voice.

One Sofar receiving station alone can not determine the position of the exploded bomb. Two or more are required. The sound waves, which travel at about 4,800 feet per second, will reach them at different times unless they happen to be at the same distance from the sound source. In operation, each sta-

tion reports by wire or radio to a central station immediately upon receiving a sound signal, giving the exact time received.

From the differences in time of receipt the location of the bomb explosion is rapidly computed. Then rescue crews are ordered on their way. Tests show that the location is accurate to within a mile or so of the correct position.

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ELECTRONICS

Dancing Rainbow Used For Transmission of Voice

► WAVING a rainbow to send signals is the newest thing in light-beam communication methods. U. S. patent 2,423,254 has just been issued on a system using what amounts to that, to Michael Rettinger of Encino, Calif.

The rainbow in this case is an artificial one, produced by projecting a narrow light beam on a prism, but it is just as real a one as the spectrum-arc painted on the heavens by falling raindrops.

In Mr. Rettinger's invention, the sender's voice or code tapings are put

through an electro-magnetic circuit that causes the prism to dance up and down. This in turn produces up-and-down swings in the rainbow-hued band of light projected at the distant receiving station.

At the latter point the spectrum falls on a photocell that is most sensitive to red, least sensitive to blue-violet. The dance of the rainbow, therefore, produces a fluctuating electric current. This is put through an amplifying system, and comes out as a reproduction of the voice or other signal used at the sending station.

This light-signalling system, since it uses light-waves of differing frequencies at a constant intensity, bears to blinkers, heliographs and the like the same relation that frequency-modulation radio does to the older amplitude-modulation kind—for blinking a light on and off is simply producing the widest changes in its intensity, from full-on to completely out.

Rights in Mr. Rettinger's patent are assigned to the Radio Corporation of America.

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PHYSICS

Highschool Girl Makes Snow-Making Device

► MAN-MADE snow, first produced by a scientist in a laboratory and later in natural clouds, can now be made in your own home for \$4.32—if you are as ingenious as one 17-year old highschool girl.

Kathleen Roan of Providence, R. I.,



SPEEDY PLANE—The world's speed record is held by this P-80R, a special version of the Army's noted jet-propelled Shooting Star. Leading wing edges are sharper, pilot canopy is lower, and air intakes are redesigned to lessen drag.

used such non-scientific apparatus as a couple of her mother's washtubs to build her snow-maker. She built the unique equipment as an exhibit for the Rhode Island Science Fair. Naturally, the judges were "snowed under" and gave her first prize. Since then, Miss Roan has shown her home-made snow device to Vincent J. Schaefer, the General Electric Company scientist who first "made" snow. He suggests snow-making may become a hobby of many young scientists.

Miss Roan first made a refrigerator from a small wash tub placed inside a larger one, with rock salt and chopped

ice between the tubs. By breathing into the smaller tub when the temperature inside it had dropped below freezing, the young scientist produced a super-cooled cloud in which the water droplets remained liquid though the temperature was actually below freezing.

Then, dry-ice was sprinkled over the cloud, and snow crystals appeared.

Other equipment used by Miss Roan included a lamp inside the wash tub to illuminate the snow-making process, a packing case for the tubs and sawdust for insulation.

A little snow might look mighty nice one of these hot summer days.

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PALEONTOLOGY

Bones of "Hand Animal"

Prehistoric animal that got its name from the prints made by a foot resembling human hand may now be studied for first time. Bones found in Arizona may be his.

► BONES of the "hand animal," the dinosaur's granddaddy which dominated the world from about 150 to 200 million years ago, may now be in the hands of scientists for the first time.

Chirotherium, which got his nickname because of the amazing resemblance of his hind foot to a human hand, left beautiful footprints all over the world in the mudflats of the lower triassic period of geological time.

But paleontologists have been a little uncertain of what he looked like because they could find no fossils of an animal which might have made such tracks.

Dr. Frank Peabody, of the University of California Museum of Paleontology, has been studying some well-preserved footprints of Chirotherium found in the dull red sandstone beds between Winslow and Flagstaff, Ariz. From these same beds he has recovered fragments of the pelvis, jaw, and skull of an animal which he believes is probably Chirotherium.

The footprints the "hand animal" left in Arizona are so perfect they could have been plaster-of-Paris impressions. So clear are the prints the phalanges of the foot can be counted. The print of the largest specimen is about 15 inches long.

By analyzing the prints and trackways—interval of step, size of print, gait—Dr. Peabody and others have reconstructed Chirotherium's appearance. Members of the Chirotherium group are estimated to have ranged in size from that of a modern chicken to a monster

standing six feet high or more at the hips. They had a tendency to be bipedal, with front feet about half the size of the hind feet.

"University of California field parties have already found bone fragments which almost certainly represent Chirotherium, but as yet positive proof in the form of a complete or nearly complete skeleton has eluded them," Dr. Peabody said.

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ORNITHOLOGY

Sea-Faring Bird Goes To Philadelphia's Zoo

► A WINGED landlubber that strayed 300 miles out over the Gulf of Mexico is now safe in the Philadelphia Zoo.

The wandering bird, now safely in a cage at the zoo, is a smooth-billed ani, a native of South America and the West Indies. It is larger than a robin, with black plumage and large hump on its bill.

The bird flew aboard the S. S. Fredericksburg as the tanker ploughed through the Gulf of Mexico.

Other sea-going birds which have gone to the zoo in recent years include a snowy owl, picked up off the coast of Greenland, and an Indian crow that flew aboard a ship 100 miles off Hindustan.

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AGRONOMY

Paper-Mill Waste Good For Liming Acid Soils

► FARMERS in northern Wisconsin have found that a paper mill waste—the greenish, ill-smelling sludge dumped by the mills after pulp is processed for paper—is rich in lime and just the thing for acid soils.

The mills are gladly cooperating with the farmers in making the sludge available to them, because getting rid of the waste has always been a serious problem. County agricultural agents, too, are cooperating by making available testing facilities to determine whether soils need lime.

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ENGINEERING

Water Flows Under Divide

Long tunnel carries water for irrigation from Grand Lake to Mary's Lake. Will supply low-cost electric energy for use in area.

► WATER is now pouring under the Continental Divide in northern Colorado through the Alva B. Adams tunnel, longest ever driven by drilling from only two openings.

The tunnel, 13.06 miles long, carries surplus Colorado River water from Grand Lake to Mary's Lake, near Estes Park, Colo. The tunnel is cut 3,800 feet beneath the hump of the Rockies. Water flows downhill through the \$7,000,000 tunnel without mechanical help from pumps.

This Bureau of Reclamation project will irrigate more than 615,000 acres in the Big Thompson River region. It will also supply over 700,000,000 kilowatt-hours of low-cost electric energy for use in the area.

Three reservoirs to control the Colorado River are operating on the western slope of Colorado's Divide. At one of these, Green Mountain Reservoir, a power plant is being built.

Horsetooth Reservoir is now under construction on the Rockies' eastern slope near Fort Collins, and plans are

underway for two more control reservoirs nearby.

Water from the tunnel will drop through seven power stations on its way to the plains. Work has started on the stations at Mary's Lake and Estes Park. Part of the electricity will be used to pump water from one reservoir to another in water control operations. The rest of the power will serve the surrounding region.

Total cost of the giant project, to be completed by 1952, is estimated at \$128,000,000. Most of this will be repaid by the sale of power, the Bureau of Reclamation predicts.

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HORTICULTURE

Dandelion Survivors Are Deformed by 2,4-D

► THE NEW weed-killer 2,4-D usually lays its victims low in a short time. This gives all the greater interest to this picture, which shows what happened

to some dandelions that survived a late-fall spraying and tried to produce flowers and seeds.

Late last fall, when the weather was already cold, 2,4-D was sprayed on several acres of lawn at the U. S. Plant Industry Station at Beltsville, Md., to kill plantains and dandelions growing there. It got the plantains 100 per cent, but a few of the dandelions survived. When they tried to blossom this spring, they produced monstrosities like those shown here.

Outstanding effect was a pronounced "siamesing" of stems and production of multiple flowerheads, closely resembling the type of freak growth sometimes found occurring naturally and known to botanists as fasciation, from its suggestion of the faces, or bundle of rods, of ancient Roman heraldry.

Most completely fasciated stem is shown at the left, which seems to have borne almost completely aborted flower structures. Strangest effect is shown at the right, where a nearly normal stem bore a frustrated flower-head, which in turn produced from its center a secondary, miniature stem and flower-head.

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PHYSICS

Spectrograph Records Light from Atoms

► A NEW infra-red spectrograph, first instrument especially designed to record with a photo-electric cell the light given off by excited atoms, has been developed by Dr. Richard C. Nelson, Dr. R. J. Cashman and Wallace R. Wilson of Northwestern University.

The new device is a combination of mirrors mounted on a heavy steel base. It breaks down infra-red light into separate wavelengths, just as a prism splits white light into its colors.

A photo-electric cell detects these individual wavelengths and converts the light energy into electrical energy which is recorded on a graph.

The scientists said that the new infra-red spectrograph almost doubles the range of atom-emitted light on which exact measurements can be made. With this spectrograph, which will give valuable information about the nature of the atom, observations that once took a month can now be made in an hour, they declared.

Construction of the spectrograph required bearings of unusual design, machined to accuracies of a millionth of an inch in some cases.

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DEFORMED—These fantastic shapes are caused by weed-killer.

RESOURCES

Pipelines Delayed

Construction of refineries also may be held up by shortage of steel now developing. Need dry weather months for laying new pipelines.

► A SHORTAGE of steel, already developing, means further delay in the construction of refineries and pipelines to decrease the threatened fuel oil and gasoline shortage. Production the first week of July was about three-fourths capacity.

Decreasing steel production is due to the increasing shortage of coal resulting from the miners' walkout in protest against the Taft-Hartley bill, according to the American Iron and Steel Institute.

An increased shortage of steel now will have far-reaching results. The good-weather period is here and ahead, when the construction of buildings and bridges proceeds rapidly. Dry-weather months are essential in laying new pipelines, and new lines are necessary before the Midwest will have a plentiful supply of liquid fuels again.

Industry expected, and was somewhat ready for the scheduled coal miners' two weeks vacation the first half of this month. It was not prepared for the early walk-out coupled with the vacation. It

is almost entirely unprepared for any threatened extended "vacation" that may follow.

The threatened shortage of coal is also beginning to worry railroad officials. It is the season when crop movements and passenger travel are high. Electric and diesel locomotives have been widely advertised, but train movements are still principally powered by coal. This is particularly true of the freight engines that are now moving wheat and other crops.

Steel shortage will affect industry building expanded plants in all parts of the country. A summer shortage of coal will be serious to northern factories because the summer and early fall is the season when northern manufacturing plants stockpile coal for the winter. Industrial areas bordering lakes Superior, Huron, and Michigan rely upon lake transportation for much of their fuel for heat and power. Delivery by boat must take place while the Great Lakes are still open.

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OCEANOGRAPHY

Lost—Large Iceberg

► A LARGE iceberg "lost" in the foggy weather of the North Atlantic is sufficiently menacing to steamship travel to cause the scheduled shift northward of trans-Atlantic routes due on July 1 to be postponed.

Last sighted on June 25 by the International Ice Patrol, the berg is believed to be between 100 and 200 feet long. Although the U. S. Coast Guard ships are equipped with radar and other new searching devices unknown in pre-war days, foul weather over the Grand Banks has prevented them from picking up the great floating piece of ice since last Friday. It was then at 43 degrees, 55 minutes north latitude and 48 degrees, 59 minutes west longitude. This is too near for safety to scheduled new track C which "turns the corner" of the Atlantic when longitude 50 degrees west crosses 43 degrees north lat-

itude for westward ships and 42 degrees north latitude for eastward ships.

Until the berg is located, which will be done quickly by air patrol as soon as the fog lifts, ships will stay on the more southerly track B. Those Europe-bound will travel farther east before they set a course on the great circle that will lead them most directly to the channel ports.

May is usually the month during which icebergs, coming down the Labrador current from their birthplaces in Greenland glaciers, are most plentiful. Sometimes there is another wave of floating ice toward the end of June, but usually it does not reach so far south and does not menace ships. The International Ice Patrol has a saying: "Home by the Fourth of July" but its sailors were still standing guard against another Titanic disaster this Fourth.

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ANTHROPOLOGY

Tepexpan Man Is Young for His Age

► FOR ALL his age, Tepexpan Man is "modern," scientists studying him at the National Museum have found. His high-domed, thin-walled skull contained a brain of the same size as those of present-day Indians. His eyebrow ridges are rather prominent, but not more so than those of many a still-living head. His lower jaw is solidly built, but is not Neanderthaloid. In particular, a sharply prominent chin separates him from the Neanderthal type. (See SNL, July 5)

He was middle-aged when he fell on his face in the marsh and died. This is shown by the solidly united seams in his skull, and by the completely ossified ends of his arm and leg bones. He was probably 40 or over when he went on his fatal last hunt.

He had lived hard before he died. One of his right arm-bones had broken just short of the wrist and had healed again. He suffered from a stiff neck, for there are limy deposits on the vertebrae showing that arthritis had set in. There were only three teeth left in his upper jaw. All the molars had departed from his lower jaw some time before he died, for the place where their sockets had been is quite smoothly healed over. The remaining lower teeth—incisors, eye-teeth and premolars—are considerably worn but otherwise in good condition.

That much of his story Tepexpan Man



PUZZLE—This picture shows how the fragments of bone are painstakingly fitted together in restoring the ancient skull of Tepexpan Man.



OLDEST MEXICAN—The recently found bones of an ancient man are spread out before the scientists who are busy with his restoration. Dr. T. Dale Stewart of the U. S. National Museum (left) holds the skull of a modern Indian for comparison. At the right is the Mexican anthropologist who made the discovery, Dr. Javier Romero. The case in which Dr. Romero brought the bones by airplane to Washington is shown at the far right.

told a little group of scientists and newspapermen at the U. S. National Museum after his arrival. The rest will come out as his much-broken face bones and what is left of his skeleton are pieced together by Senor Javier Romero and Dr. T. D. Stewart of the National

Museum. After comparative studies, in which the huge collection of Indian skulls will be used for comparison, Tepexpan Man will return to his native country, where he will be "in residence" at the Mexican National Museum.

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not designed for flight at speeds faster than the speed of sound. The XS-1's job is "to explore the transonic region and to provide us with actual flight data which might enable us to build a supersonic plane in the near future," he said.

"We want to be certain that when we do venture into the transonic region we have an aircraft strong enough and controllable enough to cope with whatever unpredictable effects may be manifested," the AAF officer explained.

The XS-1 has several advantages from being launched from a "mother" B-29, Col. Klein told the engineering society.

Launching the high-speed plane in the air avoids dangers from heavily loaded take-offs with rockets for power, makes possible test glide flights without power, saves fuel and simplifies transportation of the plane, he said. Another advantage is raising the potential speed of the XS-1 from 1,100 miles per hour from a ground take-off to 1,700 miles per hour from launching in the air.

These speeds are strictly "potential," Col. Klein warned. "For quite some time our flying will be done at subsonic speeds (less than the speed of sound)" he stated.

Col. Klein said the AAF does not know when it will be able to fly faster than the speed of sound, but, he added, "So far as we know, there is no limit as to how fast a man-carrying aircraft can be made to fly."

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METEOROLOGY

Radar Now Used To Spot Invading Storm Clouds

See Front Cover

► RADAR apparatus like the one shown on the front cover of this week's SCIENCE NEWS LETTER, which during the war kept an alert watch for enemy airplanes, now is used in weather observation.

The radar can pick up the electrical forces generated in thunderclouds and possible electrical disturbances to communication. It is also used to follow the balloons that carry radios for broadcasting weather data from aloft.

The apparatus shown on the cover is at the Air Weather Service Station at the guided missiles proving ground at White Sands, New Mexico, where the Army Air Forces has a staff investigating atmospheric conditions at altitudes previously inaccessible.

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AERONAUTICS

Supersonic Flight Ahead

Unconventional planes, still cloaked in military security, may lead to man's flying faster than the speed of sound. New planes do not have limits of XS-1.

► THE ARMY is building new, high-speed aircraft for research on flight faster than the speed of sound, Col. Philip B. Klein of the Army Air Forces Air Materiel Command, Wright Field, Ohio, revealed at the meeting of the American Society of Mechanical Engineers in Chicago.

Describing the AAF's experimental rocket plane, the XS-1, Col. Klein said

that the new planes will "give us the answers beyond the limits of the XS-1."

The new aircraft are still cloaked in military security, but Col. Klein reported, "all of them are rather unconventional in appearance in that they have either swept-back wings, very thin wings with a very small aspect ratio or are tailless or semi-tailless."

The XS-1, Col. Klein declared, was

PHYSICS

Liquid Nitrogen Used To Liquefy Oxygen

► "FREE as air" isn't always an apt simile. Air separated into its constituent gases and liquefied can be sold at a good profit, especially the liquid oxygen. To make this profitable use of air, C. C. Van Nuys, research physicist of the Air Reduction Company, Inc., has developed two processes in which liquid nitrogen is used to chill oxygen to the liquefying point.

One of the processes, covered by U. S. patent 2,423,273, operates at low pressure—not more than 45 or 50 pounds per square inch—because such pressures can be developed by blowers that do not pollute the air with lubricating oil to form a dangerously explosive mixture with liquid oxygen. The other process, on which patent 2,423,274 has been granted, uses pressures around 3,000 pounds per square inch and accepts the risk.

Both processes depend on the fact that oxygen liquefies at a different low temperature from the liquefying point of nitrogen and the rare gases krypton and xenon. The latter, insofar as they are not needed for refrigerating purposes in the apparatus, are discharged separately and can be either sold or thrown away.

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NUTRITION

Orange Juice Adds Color To Frozen Sweet Potatoes

► YOU MAY have orange juice in your sweet potatoes and ice cubes in your gravy one of these days. These are two of the latest frozen food wonders. The wonder will be that you won't know it if you do have these delicacies.

Ice cube gravy and sweet potatoes with orange juice are two developments in a study being made by home economists at Cornell University to help the Navy serve palatable meals from frozen foods.

Ella Gleim and Faith Fenton found that gravy must be frozen rapidly to avoid excessive bacterial growth. The solution to that problem was to put ice cubes in the gravy for rapid chilling.

Mashed sweet potatoes with milk had a gray color, so the home economists used orange juice. After three months in freezer storage, the sweet potatoes still had a fresh flavor and a bright orange

color which made them appetizing.

The Cornell investigators have discovered some complications in planning meals for freezing and reheating when they are to be served. Foods differ in the rate of heat penetration. Thus, a cook reheating a frozen meal with chicken, potatoes and broccoli would find the broccoli cooked by the time the chicken and potatoes were thawed out.

This can be adjusted, the home economists found, by completely cooking the chicken and potatoes before freezing.

Tests with temperatures of zero and 15 degrees Fahrenheit showed that the food was acceptable after three months storage at either temperature, but the lower temperature produced the better result. Experiments are now planned at below-zero temperatures.

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ZOOLOGY

National Zoo Acquires Some New Inhabitants

► THE National Zoological Garden will have a variety of new beasts and birds. Just received by Director William M. Mann are a pair of tamanduas, which are middle-sized anteaters from South America; a pair of pacas, large guineapig-like rodents, also from South America, and a pair of young spotted hyenas from Africa.

Antarctica contributes a pair of king penguins, and from Panama come 10 pairs of honey-creepers. The latter are small, beautifully deep-blue birds that cling tightly to the stems of plants while they sip nectar from the flowers.

Two secretary birds, long-legged snake-destroyers from South Africa, have just been received. The sharply-curved tips of their beaks and their bold golden eyes give them the general appearance of hawks on stilts.

These birds get their name from the resemblance of their stiff-feathered crests to a bunch of quill pens stuck behind the ears of some counting-house character out of Dickens. They are the African "opposite numbers" of the road-runners of our own Southwest. They attack snakes by beating them down with their strong feet, then finishing them off with their beaks.

In Boer country they are known as "slangenvreter," which is Afrikaans for snake-eater. So useful are they in the control of cobras and other venomous serpents that they have been given the protection of a special law.

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IN SCIENCE

VOLCANOLOGY

Iceland's Mt. Hekla Erupts Same Old Lava

► WHEN Iceland's famous volcano, Mt. Hekla, erupted last March, it was news, but a scientist has found that the lava which flowed from the crater was nothing new, geologically.

Dr. G. W. Tyrrell of the geology department of University of Glasgow in Scotland received a sample of lava from this year's eruption of Mt. Hekla and compared it with earlier samples, including one collected by a British scientist in Iceland in 1810.

The geologist's conclusion: Same old stuff.

Or as Dr. Tyrrell concluded in a report to the British journal, *Nature*: "It may therefore be concluded that the Recent basalt lavas of Iceland are very uniform in composition and that there has been little or no change in that respect during the historical period."

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ELECTRONICS

Purifying Equipment Available for Homes

► NOW private homes can be free of dust, soot and pollen—at least of any that enters with the fresh air for circulation by hot-air heaters or air-conditioning.

The removal unit is of the type known as the electronic precipitator, which is already used in theaters and other public buildings. This home unit, which occupies a space about two feet square, is attached in the basement to the furnace or air-conditioner. It is made by the Raytheon Manufacturing Co., and operates on the house current.

Within the cabinet in the unit, a strong electrostatic field is created by the current. The particles of dust passing through the field are given a positive electric charge. As the air moves onward, it passes through vertical collecting plates charged negatively. These are the dust collectors.

These plates need occasional cleaning. The process is simple. The electric current is cut off, and a water valve turned on. A spray quickly does the washing.

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ENGINEERING FIELDS

ENGINEERING

Prefabricated Shelter Made for Cold Climates

► A PORTABLE, prefabricated shelter for troops in Arctic climates, revealed by the Army, is under advanced design by the Corps of Engineers. Complete building, unassembled, will be light enough for cartage by plane.

Lightness and warmth are two essentials. The sidewalls and flat roof will be made up of panels, eight by four feet in size, composed of two thin sheets of aluminum with insulation between. The flooring is the same type of panel with the addition of an eighth-inch layer of wood on its upper surface. Outside surfaces need no paint; inside walls are painted to give a "warm color."

The standard building is eight feet wide, 20 long and nine high. Its width, however, can be doubled, and its length increased. The building is supported by a rigid aluminum frame. A novel feature is the floor beam. It is an open truss aluminum joist with a jack at each end. This makes easy levelling of the structure on rough land or ice.

Heating plans are designed for an indoor temperature of 70 degrees Fahrenheit when it is 70 degrees below zero outside. The structure will withstand a 125-mile-an-hour gale. It can be quickly assembled by unskilled workmen wearing Arctic clothing, including gloves.

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PHYSICS

Tube and Cellophane Used for Shock Wave Study

► A SIMPLE instrument, basically a metal tube about eight feet long, divided by a piece of cellophane, has been devised for shock wave studies by Dr. Lincoln G. Smith, of the department of physics at the University of Michigan.

Shock waves produced in the tube are like those from bombs and depth charges, though much weaker.

Dr. Smith suggested that this equipment might be used as an inexpensive wind tunnel. Very high pressures in the small chamber would force wind from the explosion through the tunnel at supersonic speeds, he said.

Cellophane separates the metal tube

into two sections, one longer than the other. The shorter chamber is filled with compressed air. The compressed air explodes through the cellophane when the partition is punctured by a plunger.

In a fraction of a second, the shock wave from the explosion rushes to the end of the tube's longer section. There it strikes a metal plate, which can be adjusted to different angles.

The tube has a glass window on each side of the plate. An electric spark outside one window photographs the shock wave, just as it hits the metal plate, on a film held against the other window.

Science News Letter, July 12, 1947

PUBLIC HEALTH

Much Money Needed For Safe Sanitation

► NEARLY \$8,000,000,000 is needed to give some 100,000,000 Americans improved water supplies and waste disposal to cut down danger from filth-borne diseases such as dysentery, diarrhea and typhoid fever, the U. S. Public Health Service revealed.

The figures are based on an extensive survey just made by the Service, with state and local health authorities co-operating. It is called a sanitation inventory, and the report of the survey itemizes, state by state, the cost of obtaining the healthy environment essential to a national health program.

Water works construction is needed to serve 81,000,000 persons living in cities and towns. Sewerage facilities are needed for some 85,000,000 people in cities, towns and communities of over 200 population. Approximately 27,000,000 persons living in rural homes have unsatisfactory water supplies, and 33,000,000 rural residents lack adequate waste disposal facilities.

A full report of this sanitation survey will be available to officials and others interested early in the fall from the Federal Security Agency.

Science News Letter, July 12, 1947

HORTICULTURE

Cut Your Roses Late If You Want Them to Keep

► ROSES are gathered better late than early. Late afternoon is the best time to cut roses you want to keep well, say U. S. Department of Agriculture scientists. This is probably because the leaves and stems have more carbohydrate in them after a sunny day.

Science News Letter, July 12, 1947

ASTRONOMY

Sunspot Maximum Predicted For the End of Next Month

► SUNSPOT maximum will be reached this August, if the calculations of Dr. A. G. McNish and Miss J. Virginia Lincoln of the Central Radio Propagation Laboratory, National Bureau of Standards, are correct.

From now until the end of the summer, the number of gigantic spots on the sun that may easily be seen through smoked glass and small sunspots visible only with a good telescope may be expected to increase. But after August, fewer large clusters and minor splotches will be seen on Old Sol's disk.

The number and activity of sunspots, whirlpools in the outer layers of the sun showing variations of the sun's temperature, are general indicators of the relative intensity of radiations sent from the sun to the earth. Prediction of long-term changes in solar activity is therefore important in forecasting several months in advance just how radio waves will act. This helps radio engineers calculate the best usable frequencies for communication between any points in the world at any hour of the day.

Prolonged, moderate disturbances are frequent during sunspot minimum. Briefer, more erratic storms tend to occur during sunspot maximum. They usually take place a day or two before a large spot passes the sun's meridian.

It is the sun's ultraviolet rays that ionize the atmosphere. The upper regions, 30 to 250 miles above the earth where the air particles are spaced so far apart, stay perpetually ionized. The lower ones, ionized during the day, return to their normal non-ionized state at night.

When a broadcasting station issues a series of radio signals, the energy travels in two ways. One wave travels along the ground, gradually becoming weaker as it spreads out over a greater area and as energy is absorbed from it. The sky wave travels upward until it reaches the ionized region of the atmosphere and then is reflected back in much the same way that light is reflected from a mirror. Sometimes short radio waves are bounced back and forth between the ionosphere and the earth's surface many times before they reach your receiving set.

Science News Letter, July 12, 1947

ANIMAL PATHOLOGY

Cattle Disease War

A million animals are doomed to death in Mexico's all-out war against foot-and-mouth disease being fought with the aid of U. S. veterinary forces.

By WATSON DAVIS

► IF THE DEVIL himself went these days to central Mexico, he would be caught and slaughtered along with all the other cloven-hoofed animals.

For he would be exposed to the greatest danger to America's livestock industry—foot-and-mouth disease. The fate of all the cloven-hoofed animals that can catch and carry "fiebre aftosa," as the cattle disease is called in Spanish, is decreed to be death.

Mexico is waging a full-scale war against an enemy which is a virus. Rifle fire, chemicals, road blocks, jeeps and bulldozers, ambulances, tank trucks and sprayers are used in the fight. The Mexican army is in action.

In the midst of the territory invaded by the virus from abroad is the Mexico

City GHQ of the combined American-Mexican veterinary forces that are fighting the invasion with slaughter and disinfectants.

Seventy top U. S. veterinarians and engineers have joined the battle. More than 90 carloads of heavy machinery, power shovels, bulldozers, jeeps, trucks, tank trucks, sprayers and trailers have been rushed into the Mexican battle area from U. S. surplus war stores. American dollars, Mexican pesos and manpower from both countries are working side by side.

At present the war is a gigantic holding operation. A major effort is being made to keep the infection within the large area that it has already invaded. Barriers against its spread are flung across the country north and south. Veterinary scouts are alert to discover and swiftly

stamp out any outbreak of the disease in any other areas. American veterinarians and officials are particularly anxious to prevent at all costs any possible spread across the Mexican-U. S. border northward.

A finish fight of long duration is being organized. Only by ruthlessly wiping out all the cattle in an infected area, whether they are ill or not, can aftosa be eliminated. A million animals—two-thirds of them cattle—are in the area and all are doomed.

Vaccines, which are used in Europe where the disease is always present, cannot be used to eliminate the disease in Mexico. Extermination by death to all cloven-hoofed animals is the only method being used in the joint American-Mexican campaign. Anything less is considered by the experts as temporizing and too dangerous. Unless the disease is eradicated, sooner or later the cattle disease will spread to the whole of the North American continent, with disastrous food and financial effects.

A large new building, in the heart of Mexico City's older section, houses the joint Mexican-U. S. staffs. A northern Mexico stockman and lawyer, Oscar Flores, Mexican undersecretary of agriculture, is director of the aftosa organization, while Dr. M. S. Shahan, a top-flight scientist of the U. S. Department of Agriculture, is the co-director in charge of the American participation.

Millions Being Spent

Millions of dollars are being spent on equipment, supplies and personnel and as indemnities for cattle, hogs, sheep and goats slaughtered. The U. S. Congress appropriated \$9,000,000 for use up to July 1 of this year and the Mexican government is spending \$9,350,000 up to the same time. Before the fight is over it may cost \$250,000,000, an investment to save the U. S. \$12,000,000,000 cattle industry.

American government officials and stockmen are apprehensive and determined in the fight. Never before has the North American continent had such a widespread foot and mouth disease invasion. But there have been serious invasions before, notably the one that invaded 21 states and the District of Columbia in the United States in 1914. These were stopped by the same meth-



DISEASE WAR—In the fight against foot-and-mouth disease in Mexico all travelers must walk through sawdust wetted with caustic soda solution. Even a little Mexican girl must tread the disinfecting sawdust trail under the eye of a Mexican soldier.



ods—rigorous quarantine and killing of all exposed animals that can get the disease and can carry it—cattle, pigs, sheep, and all other cloven-hoofed creatures, domestic and wild.

Thousands of Mexicans, by day and by night, are reminded of the war on the cattle plague when they have to walk along a sawdust trail, saturated with lye, whenever they leave a quarantine zone. Every automobile, bus, and truck must ford a little pond of caustic soda solution. This disinfection method is an attempt to prevent the infected dirt of barnyards from carrying the very contagious disease to uninfected parts of the nation. Every road leaving Mexico City has aftosa quarantine blocks where, under the watchful eyes of soldiers, all who travel must be purified by getting out of their vehicles and trudging through the mushy disinfecting trough. Some of the country people walk through the caustic with their feet bare, since it is usual for them to go shoeless.

Much Soda Used

Large amounts of sodium hydroxide (caustic soda or lye) disinfectant are being used. It is sprayed freely on barnyards and cattle runs when extermination of the disease is undertaken. Already over 120 tons of the chemical have been imported from the United States. This caustic is the best disinfectant against aftosa and in most cases only a 2% solution need be used.

Such quarantine measures may prevent foot-and-mouth disease from spreading. But slaughter is the real weapon against the epidemic. Eventually all animals in the infected area that can get the

disease will be killed. Those that are not yet sick are being sent to market as fast as possible, at the rate of a couple of thousand a day. Fortunately human beings do not often contract the disease by eating meat or by contact with diseased animals. When they do, it is a very minor trouble.

Sick animals and those in contact with them are killed and buried in deep trenches, dug by bulldozers and power shovels. Owners are paid for the animals that have to be killed.

Payment a Problem

Indemnifying the owners is one of the difficult parts of the program. If too much is paid for sick animals, some unscrupulous cattlemen might find it profitable to spread the disease in hope of collecting more than the animals are worth. If too little is paid, the owners might not let them be killed. They might hide them in the mountains, where they would remain a danger.

No animal is paid for until it is killed and buried. Wealthy ranchers have seen whole pedigreed herds driven into mass graves and shot. A poor peon will lose his yoke of oxen used for plowing.

Paymasters carry hundreds of thousands of pesos in cash to where the killing is done and they pay off in cash on the spot. Remodeled U. S. army ambulances with their red crosses painted out are used as paymaster cars. Some of the Mexican farmers have had put in their hands more cash than they had ever seen before.

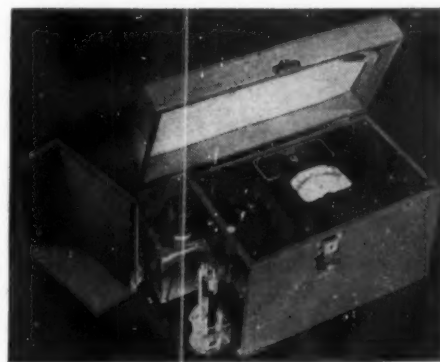
If the oxen that plowed the land are killed, crops can't be raised. Cash can't raise food. So mules are being bought

in the United States and rushed into Mexico to replace the slaughtered oxen. Twenty thousand mules are on the way and double or triple that number will be needed. Mules are not the same as oxen, but mules, like horses, don't get aftosa. The Mexicans will change their ways and use mules. They may raise more crops as a result. For mules are more active animals and work faster.

May Modernize Farming

The aftosa calamity may bring about a revolution in Mexican agriculture. Tractors, drawing modern plows, may replace oxen in some cases. Power farming may directly supersede cultivation methods that were outmoded in the middle ages. A disease disaster may become a blessing in disguise, although the campesino who has his little plot of land, thanks to the Revolution, can not be expected to think so.

There will be some unusual hunting in Mexico in the aftosa infected regions. Wild animals that can contract the disease must be eliminated. Deer, antelope, and wild pigs or peccaries must be



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Catalog E-96(2) gives further details.



Jr1 Ad E-96 (25e)

Do You Know?

Less than half as much *wood* is used in America for fuel as 50 years ago.

Otters sometimes take over *burrows* dug by muskrats or beavers, some naturalists claim.

"Radiant heating" of homes means that *warmth* is supplied from steam or hot water pipes built into the floors or sidewalls.

The Keystone or Treaty *oak* at Jacksonville, Fla., is so large that 4,000 persons can stand in its shade at noon, it is estimated.

New fountain pen *ink* writes dry by vertical penetration into the paper and not by evaporation or drying of the solvent, the makers claim.

Television broadcasts are available today to some 25,000,000 people living in eight metropolitan areas; by 1948 they will be available to an additional 10,000,000.

The American Great Lakes, covering 95,000 square miles of deep water, never freeze over, but each winter heavy ice forms along shore lines, in places several miles in width.

In India, a million acres of *safflower* are grown each year; the thistle-like flower is used to make a yellow dye, the leaves are used in salads, and oil from the seeds as food and in paint.

Many new *insecticides*, germicides and fumigants have names composed of initials such as DDT; they are confusing but much simpler to the layman than their long and complicated chemical names.

Corn derivatives are used as principal *ingredients* in making candy, jellies, preserves, baked goods and other food products; they are used in brewing malt drinks, finishing textiles and in adhesives and soap.

The wartime Emergency Plant Disease Prevention Project was handled by 44 experts in the field who traveled almost constantly, investigating conditions to offset any attempts at sabotage by spreading *plant disease*.

wiped out. Airplanes will be used to locate the wild animals to be hunted, as well as domestic cattle that may have strayed into the wilderness and hills.

Meat is plentiful in Mexico now, but in coming months, as the aftosa war continues, it will become scarce. Just now cattle are being rushed to the market. Officials are hopeful that Europe can be supplied with some of the Mexican meat, since foot-and-mouth disease is already widespread there. Canning of meat in Mexico may be undertaken to save some of the excess that must be either used or wasted.

American stockmen and government officials want the United States to do more than cooperate in the actual aftosa war in Mexico. First of all, perhaps, they would like to see a good, tight, woven wire fence along the Mexican-

U. S. border that would keep hogs, cattle and people from coming over unannounced, carrying with them the dangerous foot-and-mouth and other infections.

They want to see research work on foot-and-mouth disease undertaken on a major scale in order to be better prepared if the disease can not be held in check in Mexico and does spread northward. To prevent any accidental spread, these investigations must be conducted outside the western hemisphere in countries that already have the disease.

Meanwhile, the best of our fighters against animal diseases, under the direction of the famous Bureau of Animal Industry of the U. S. Department of Agriculture are at the front in Mexico. And there are alert veterinary reserves patrolling the border.

Science News Letter, July 12, 1947

MINERALOGY

Metal Resources Limited

Known deposits in U. S. are expected to be gone in from 10 to 75 years. Present petroleum supplies will last only 15 years. Bituminous coal will last for centuries.

► AMERICA has plenty of coal to ship abroad, if miners continue to work. But the natural supply of other American mineral resources is decidedly limited, as for example, petroleum fuels.

What we can spare, what we must hold for the future and what we must import is becoming a prime national question.

There is plenty of uncertainty relative to this nation's mineral reserves.

A bipartisan committee of experts is being urged to study the situation. It will have a double-headed job: 1. To determine which and how much of the minerals produced in the United States can be spared for other countries, and 2. What foreign minerals, and in what quantities, should be obtained from abroad and stockpiled for future emergencies.

Undoubtedly there are vast deposits of minerals in America as yet undiscovered. At present, however, only known deposits can be considered in determining both exports and import needs. In the last report of the U. S. Bureau of Mines it is urged that an inventory job on a national scale be undertaken at once. It is a survey that would take years to complete. Every known scientific method of determining

mineral deposits would be employed, both in continental United States and in Alaska.

An idea of the present situation can be obtained from an unpublished report made earlier this year to Congress by the U. S. Bureau of Mines and the Geological Survey. It contains estimates of the 42 most essential minerals in known reserves. Discovery of new deposits, however, would change the picture.

Among metals, based on the average annual production and consumption during the ten years ended in 1944, magnesium, molybdenum and titanium exist in plentiful quantities. Titanium oxide is widely used as a pigment in paint; molybdenum is important in steel alloys.

Iron ore is sufficient for 76 years. Other estimates are for a greater period, but it depends upon improved methods of reducing ores of low-grade now unused. Domestic bauxite for aluminum will last 23 years. With new methods of obtaining alumina from other clays, the supply of aluminum is assured for a much greater period. There is a 50-year supply of arsenic and a 36-year supply of bismuth. (Turn to page 30)

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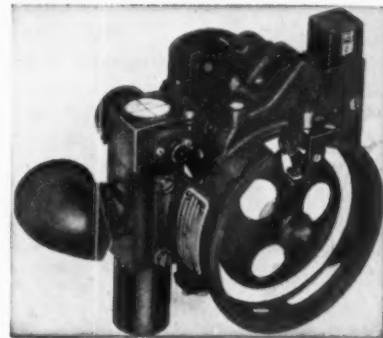
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From Page 28

The zinc reserves will last 20 years; copper and gold, 19; silver, 13; cadmium, 11; lead, 10; and vanadium, eight. The domestic reserves of manganese, platinum metals, antimony, mercury, tungsten, tantalum and chromite are even lower. Nickel and tin are not produced commercially in the United States.

Among the non-metals, all especially important in times of war, there is an unlimited reserve of nitrates and salt, enough bituminous coal and lignite for over 40 centuries, and sufficient anthracite for 187 years. Phosphate rocks for fertilizer and chemicals are in a six-century supply. Potash is more limited, but it will last nearly a century, it is estimated.

Sulfur reserves face exhaustion in 36 years. It is an important material, the basis of most of the sulfuric acid widely used in many industries. Fluorspar, needed for the newly-harnessed fluoride chemicals, is sufficient for 33 years.

Known reserves of petroleum will be exhausted in 15 years, according to this estimate. The discovery of new oil fields, however, is expected, and the production of fuel oil and gasoline from coal, natural gas and oil shale is about to begin. The known natural gas will last 55 years.

Mica, long-fiber asbestos suitable for weaving, flake graphite, industrial diamonds, and quartz crystals for electrical apparatus are produced only in very small quantities in the United States. These are among the non-metallic minerals that should be stockpiled.

Science News Letter, July 12, 1947

YOUR HAIR

AND ITS CARE

By O. L. Levin, M. D. and H. T. Behrman, M. D.

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Botanical Orphan

➤ CORN is a botanical orphan. The wild plants ancestral to most other grains, as well as to such other cultivated plants as sugarcane, potatoes, melons, onions, tomatoes, apples, pears, grapes, strawberries, raspberries, cotton and tobacco are well known. They resemble their cultivated descendants mainly in being less productive, both in quantity and in individual size of product. Botanists and plant explorers have sought them out eagerly because sometimes they can be crossed with over-refined cultivated varieties to impart new disease resistance or climatic hardiness.

Wild corn, however, has never been found. Several times it has been suggested that corn is a descendant of a tall, robust grass called teosinte, found in Mexico and Central America, or of a hybrid between this and some other grass. The theory doesn't seem to stand up; it has even been suggested that the cart may have been put before the horse, and that teosinte is descended from corn, rather than corn from teosinte.

One thing the two plants have in common, that sets them apart from all other grasses: both have "tassels," that is, their male or pollen-forming flowers are borne in a branching, tree-like arrangement at the top of the stem. But it takes a long stretch of imagination to detect a resemblance between the corn ear and the female or seed-bearing inflorescence of teosinte.

That corn ear is the real stumper. No other grass has anything like it. It is obviously the product of long selection in cultivation, for like many other plant structures desirable from the cultivator's standpoint it is very bad from the plant's. With seeds firmly fixed in the cob, and

the ear sheathed in husks, it is about as ill-adapted for a natural dispersal of its seeds as can well be imagined. It can grow only where man plants it; corn is even more dependent on man than man is on corn.

Moreover, it has been that way for centuries. In very ancient tombs of the South American uplands, older than the Inca empire, pottery vessels shaped to look like corn ears have been found—and the ears are like those raised by the Indians of those regions today.

It is quite possible that the wild form of corn never will be found. If that is so, botanists will be hunting for it on the eve of Judgment Day. For they are a persistent lot.

Science News Letter, July 12, 1947

BIOLOGY-PHYSICS

Laboratory to Study Marine Biophysics

➤ MARINE biophysics and cancer are to be the two principal subjects of research in Donner Hall, a building of 64 rooms costing \$150,000, title to which has just been handed to the Institutum Divi Thomae by the Donner Foundation.

It is adjacent to Bradley Hall, present laboratory building of the Institutum in Palm Beach, Fla.

The Institutum Divi Thomae, with northern headquarters at Cincinnati, is a graduate research institution open to all scientists without respect to race, color or creed. It has been operating since 1935, and now has 14 affiliated units throughout the United States.

Science News Letter, July 12, 1947

BIOCHEMISTRY

Digestive Enzymes Aid in Lard Making

➤ PROTEIN-DIGESTING enzymes like pepsin and papain are used to loosen the grip of animal body tissues upon their fat, and thereby make lard production possible in less time and at lower rendering temperatures than those used in present practice, in the process on which patent 2,423,102 was granted to Dr. H. L. Keil, research biochemist for Armour and Company.

Science News Letter, July 12, 1947

Early adobe houses built by Indians in Arizona, New Mexico and southern California, were left in the natural color of the mud blocks to make them less visible to enemies; Spanish settlers introduced the white finish.

Books of the Week

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ADVENTURES IN MAN'S FIRST PLASTIC; The Romance of Natural Waxes—Nelson S. Knaggs—*Reinhold*, 329 p., illus., \$6.75. Collecting waxes is adventure enough, but their relationship to the progress of civilization and modern arts and trades must be understood to appreciate them.

ANIMAL NUTRITION—Leonard A. Maynard—*McGraw-Hill*, 2nd., 494 p., illus., \$5. Incorporating the many striking advances in nutrition, this book is principally for students of farm animal nutrition. References, because of the war and unavailability of papers, are only to work carried out in the U. S.

THE CHEMISTRY AND PHYSICS OF ORGANIC PIGMENTS—Lyde S. Pratt—*Wiley*, 359 p., illus., \$6. Providing a broad background of history, theoretical considerations of the relation between color and chemical and physical structure, raw materials, chemistry involved, structural types, and methods of testing known and unknown pigments, this manual provides the student with an appreciation of the factors involved in experimental investigation and industrial application.

EXERCISES IN ORGANIC SYNTHESIS—Jacob G. Sharfkin—*Crowell*, 60 p., paper, 75 cents. Dealing only with the aliphatic series, this handbook helps students select from general methods specific syntheses to solve their particular problems.

FUNDAMENTALS OF INDUSTRIAL ELECTRONIC CIRCUITS—Walther Richter—*McGraw-Hill*, 569 p., \$4.50. With a minimum of mathematics, this textbook aims to reduce circuits containing vacuum tubes to their more familiar elements, so that both engineer and practical man can analyze them and then design their own.

IG FARBEN—Richard Sasuly—*Boni and Gaer*, 312 p., \$3. This account of the far-reaching influences of IG Farben on manufacturing, economics, and politics helps explain the recuperative ability of German science.

LIGHTING YOUR PICTURES—Don Mohler—*Ziff-Davis*, Little Technical Library, 147

p., illus., 95 cents. A practical discussion of best lighting effects.

MAMMALS OF NORTH AMERICA—Victor H. Cahalane—*Macmillan*, 682 p., illus., \$7.50. Divided into families, all are thoroughly discussed with respect to life histories, habits, distinguishing characteristics, habitats, and range.

MINERALS YEARBOOK 1945—U. S. Dept. of the Interior—*Govt. Printing Office*, 1688 p., \$4. A review of the mineral resources and industries of the United States and their reconversion to peace; foreign min-

SEISMOLOGY

St. Louis Quake Was Local

Weight of water may have caused earth movement but strain must have been accumulating for long time before the recent rains.

► THERE is a possibility that St. Louis's flood-time earthquake was triggered by the weight of the waters, both in the river and saturating the earth from near the surface down to bedrock, stated Dr. James B. Macelwane, S.J., in a Science Service interview. The actual strain in the crustal rock, which the quake relieved, had been accumulating for a long time, so the flood cannot have done more than add the final straw.

It was a strictly "home-grown" earthquake, for it was felt with equal intensity throughout the metropolitan area, all the way from Florissant, Mo., northwest of the city, to East St. Louis and the other towns on the Illinois shore of the Mississippi. There seems to have been no sharply marked epicenter. Dr. Macelwane thinks that the waterlogged condition of the soil may have had something to do with this unusual uniformity of intensity over a considerable area.

"I had gone to bed but was still awake when the shock occurred, shortly before midnight. I recognized immediately what it was, but was not at all excited, because it was only a little earthquake," said Dr. Macelwane.

Despite its slight intensity, the quake wrote large records on the University seismographs. It made a one-inch trace on a short-period Wood-Anderson instrument, and a four-inch one on a long-period Sprengnether. Apparently it

erals review also included.

RADICALISM AND CONSERVATISM TOWARD CONVENTIONAL RELIGION—Philip Morton Kitay—*Teachers College, Columbia Univ.*, Contributions to Education No. 919, 117 p., \$2.10. A psychological study of a group of Jewish college students.

TELEVISION—Alfred N. Goldsmith et al.—*RCA Review*, Vol. III (1938-1941); Vol. IV (1942-1946), 486 and 510 p., illus., paper, \$1.50; cloth, \$2.50. Collections of essays dealing with advances in television and the various fields connected with these advances.

UNIT PROCESSES IN ORGANIC SYNTHESIS—P. H. Groggins—*McGraw-Hill*, 3rd ed., 931 p., illus., \$7.50. A systematic presentation of the principles and practices of organic reactions as applied to their technical application.

Science News Letter, July 12, 1947

failed to record itself at other seismological observatories even at moderate distances from this city, for no telegraphic reports have come in.

It seems likely, Dr. Macelwane added, that the focus of the earthquake, its actual point of origin, was at a fairly considerable depth. St. Louis is built on clay of no great depth, overlying limestone strata about a mile thick. Beneath this is granite, and it was in this crustal rock that the jarring break occurred.

The present earthquake apparently had no relation to the New Madrid area, where one of the most violent quakes in American history occurred in 1809, sinking the land surface and creating several new lakes.

Science News Letter, July 12, 1947

Traffic accidents on American highways are due to several factors, an expert states; average cars are run 1,000 miles a year more than before the war, the average car is older, and highways are wearing out faster than repaired.

U. S. Civil Aeronautics Administration is consulting the aviation industry with a proposed order standardizing airport runways as to lengths, widths and ground strength for different types of use.

On an average, one traffic accident in every 24 is fatal in darkness, and one in 37 in daylight.

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☼ **BROOMS AND POT-SCOURERS** are made with neoprene rubber sponge heads which resist wear and can hold plenty of suds. The brooms sweep without raising dust or scratching waxed floors.

Science News Letter, July 12, 1947

☼ **ATTRACTIVE** plastic tray for serving food may be used also as a drain board when washing dishes. The center of one end of the tray is curved gracefully downward, forming a draining lip to fit over one end of a sink or to act as a support to hold the gadget level when set on a table.

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☼ **SIX-COLOR** mechanical pencil holds the almost unbreakable leads within an ordinary-sized barrel where they are quickly selected by simply adjusting a sturdy metal clip attached to the head. Instant lead selection is afforded by small colored dots imbedded in the pearl-gray shatter-proof barrel.

Science News Letter, July 12, 1947

☼ **MYSTERY RADIO**, called an electronic toy, resembles a small earphone, and operates without tubes, battery or electric current. Its two wires lead to a ground and antenna respectively. In a frame house, a bed spring can be used as the antenna. The radio receives the nearest local station.

Science News Letter, July 12, 1947

☼ **LENS ATTACHMENT** for cameras



permits the user to achieve any degree of soft focus simply by turning the calibrated ring which can be noted in the picture. It automatically enables anyone also to control diffusion, it is claimed, obtaining any degree from razor-sharp to misty-soft.

Science News Letter, July 12, 1947

☼ **FOLDING DOORS** and walls are made on a fire-resistant plastic coated fabric, in a series of vertical semi-rigid accordion pleats, covering a steel frame foundation. The partition, which slides along an overhead track, requires much less space than swinging doors.

Science News Letter, July 12, 1947

☼ **MOTION PICTURE** screen, a permanent fixture for theaters, lessens dis-

tortion and eyestrain, and gives an illusion of true depth. It consists of a steel frame with two seamless sheets made of very fine glass fiber, one laced behind the other to the curved steel frame. From theater seats, it appears to be flat.

Science News Letter, July 12, 1947

☼ **FLOW METER**, to record both direction and magnitude of the flow of water in a stream, has two rotors with their axles at right angles to each other. The flow of water turns the rotors, causing vanes to pass between electrodes, thus affecting an electric current and counting revolutions. Direction is computed from the ratio of the two rotor speeds.

Science News Letter, July 12, 1947

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Question Box

AERONAUTICS

What plane has a "potential speed" of 1,700 miles per hour? p. 23.

ANIMAL PATHOLOGY

Why is Mexico killing a million animals? p. 26.

ELECTRONICS

How can a dancing synthetic rainbow be used to transmit sound? p. 19.

How does the "Sofar" station work? p. 19.

HORTICULTURE

How were surviving dandelions affected by 2,4-D? p. 21.

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Where published sources are used they are cited.

MINERALOGY

How long will our coal outlast our petroleum? p. 28.

PALEONTOLOGY

How did the "Hand Animal" get its name? p. 20.

PHYSICS

How can a profit be made from selling air? p. 24.

How did a highschool girl make her own snowstorm? p. 19.

What simple equipment is used in studying shock waves? p. 25.

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